

## **APPENDIX A: DEFINITION OF TERMS AND ACCRONYMS**

### **MONITORING AND REPORTING PROGRAM NO. R9-2003-0306**

Note: for terms-of-art that are not listed below, please see the definitions at CCR Title 27 §20164.

**“CCR Title 27”** means the State Water Resources Control Board’s regulations, in division 2 of Title 27 of the California Code of Regulations, applicable to the discharge to land of waste that is not hazardous waste. An unofficial copy of these regulations is available for downloading at <http://www.swrcb.ca.gov/cwphome/chap15/docs.htm>.

**“40 CFR 258”** means the regulations under Part 258 of Title 40 of the Federal Code of Regulations that apply to MSW landfills.

**“ACM”** means the federal Assessment of Corrective Measures process, under 40 CFR §258.56, which applies to any MSW landfill that has exhibited a measurably significant release over the applicable Water Standard at any well along the point of compliance for any Appendix II constituent. In California, this process is one in which the discharger determines the nature and extent of the release, implements interim corrective action measures, and develops a broad suite of possible measures, including a subset thereof which the discharger will propose for RWQCB adoption under the Selection Of Remedy (SOR) process. Generally speaking, the federal ACM and SOR processes serve the same function, under the federal approach, as the Detection Monitoring Program does under the State approach.

**“Affected parties”** means all people who own, or reside upon, land outside the facility boundary that is underlain by any portion of the release from the landfill. Under 40 CFR §258.55(g)(1)(iii), the discharger must keep an up-to-date list of all such people and must assure that they are invited to the discussion of proposed corrective action measures, pursuant to 40 CFR §258.56(d).

**“AMP”** means a federal Assessment Monitoring Program, under 40 CFR §258.55, which applies to any MSW landfill that, under 40 CFR §258.54(c) has exhibited a measurably significant increase over the background value for any Monitoring Parameter. In California, given that an MSW landfill will have established background as the Concentration Limit for each Monitoring Parameter, the exceedance of the background value for a monitored constituent at any monitoring point also constitutes a violation of the Water Standard, thereby – in most instances – triggering the federal Assessment of Corrective Measures (ACM) and Selection Of Remedy (SOR) studies. The term also describes the federal program that: (1) is ongoing during the ACM and SOR studies and under the CAP; (2) constitutes the federal monitoring program that continues after successful completion of the Corrective Action Program.

**“Appendix I”** (to 40 CFR Part 258) means the suite of 47 volatile organic constituents and 17 metals used as the default monitoring parameter list under the federal MSW landfill regulations (40 CFR §258.1 through §258.75). The listed constituents are a subset of those listed in Appendix II and are subject to monitoring and data analysis every six months. The RWQCB

can adopt surrogates for the 17 metals, and can eliminate from the entire suite any constituent that it finds should not be released from the landfill or derived from such a release.

**“Appendix II”** (to 40 CFR Part 258) means the suite of 213 hazardous constituents used as the default constituent of concern list under the federal MSW landfill regulations (40 CFR §258.1 through §258.75). The listed constituents are subject to periodic scans, at selected compliance and background wells, either annually or, as adopted for this landfill, every five years. Constituents detected (trace level or higher) and verified in a retest sample become Monitoring Parameters. The RWQCB can eliminate from the entire suite any constituent that it finds could not be release from the landfill or derived from such a release.

**“Background”** when applied to a reference data set used in testing for a measurably significant indication of a release for a given well/MPar pair, means a suite of data which comes as close as possible to representing the data one would get, for that MPar at that well, if there were no release from the landfill.

**“Background well”** means a monitoring well whose purpose is to provide an indication, for each monitoring parameter (MPar) and monitored ground water body, of the mean (or median) and variably one would expect in the MPar’s concentration in that ground water body in the absence of a release from the landfill. Such wells can be upgradient, side-gradient, or (in rare instances) far-downgradient of the landfill. Due to the nearly ubiquitous presence of geographic variation, intra-well comparisons have a greater statistical power than inter-well comparisons. Therefore, the purpose of this type of well is three-fold: (1) to validate that a compliance well’s historical data, for a given MPar, can be used as the background data set for that well/MPar pair because the compliance well’s historical data does not appear to reflect the presence of a release; (2) to identify the need to adjust the monitoring approach because of the arrival of waters affected by a release of that MPar from a source other than the landfill; and (3) to identify a condition in which an MPar is release from the landfill and migrates to this well in the unsaturated zone (e.g., volatile organic constituents carried by an expanding LFG release in the unsaturated zone).

**“California Nonstatistical Data Analysis Method (CNSDAM)”** means the test described in the M&RP for this landfill, for use jointly on all those MPars, at a given compliance well, whose applicable background data set exhibits trace level or higher concentrations in less than 10% of the data.

**“CAO”** means a Cleanup and Abatement Order. [See also TSO]

**“CAP”** means a Corrective Action Program that implements the SWRCB’s requirements under CCR Title 27 §20430 and under SWRCB Policy No. 93-62 which, regarding an MSW landfill, requires the RWQCB to apply any federal requirements, under 40 CFR §258.58 (federal Corrective Action Program), that are additional to, or are broader in scope than, the CCR Title 27 requirements.

**“CLGB”** – see “concentration limit”

**“Corrective action measure (CAM)”** means an active or passive process (or installation) that the discharger implements or constructs to constrain a release, to eliminate its effects, or to prevent or minimize the release of additional waste from the landfill. The scope of the term includes **“interim CAM,”** which is applied before the adoption of the Corrective Action Program, and includes **“active CAM,”** which involves the induced movement of polluted water within the impacted aquifer (*e.g.*, a pump-and-treat operation).

**“Compliance well”** means any monitoring well named in the M&RP as a ground water monitoring point to be used in detecting, or tracking, the release. The term does not include assessment wells that are used [under CCR Title 27 §20425(b) and 40 CFR §258.55(g)] to delineate the nature and extent of the release, unless the RWQCB specifically names such a well as a ground water monitoring point in the M&RP.

**“Concentration limit”** is a part of the landfill’s Water Standard and means the reference background data set, or reference concentration value, for a given constituent against which one compares current compliance well data to identify, in detection mode, the arrival of the release at a given well and to identify, in tracking mode, if the corrective action measures are bringing the landfill back into compliance with the Water Standard [for that monitoring parameter (MPar), in the portion of the aquifer sampled by that compliance well]. For compliance wells within the area affected by the release, this limit can be a single number, adopted by the RWQCB as a concentration limit greater than background (**CLGB**) under CCR Title 27 §20400(a)(3) through (h) and 40 CFR §258.55(I) for a given MPar involved in the release. Otherwise, this limit will be either the applicable background data set, for MPar’s that are readily detectable, or will be the method detection limit, for a constituent that exhibits trace level or higher values in less than 10% of the background data (*i.e.*, an MPar that is subject to the California Nonstatistical Data Analysis Method at that compliance well).

**“Constituent of Concern (COC)”** is a part of the landfill’s Water Standard and means the list of constituents that could be released from the landfill, including the foreseeable breakdown products of all such constituents. For the ground water medium at an MSW landfill, this list must include all Appendix II constituents except for those that the discharger can show are not being mobilized in the landfill’s leachate or, for VOCs only, in its produced gases (LFG). A constituent on this list becomes a monitoring parameter only after being detected (at trace level or above) and then verified by a well-specific retest in a periodic scan of compliance wells affected by the release.

**“Detect”** when applied to a scan of leachate or ground water, means that the constituent for which the scan is conducted shows up at trace level or higher. For constituents of concern and monitoring parameters that are rarely detected in background, the term means analyses done using a laboratory analytical method that complies with CCR Title 27 §20415(e)(7).

**“Discrete retest”** means a particular means of validating a preliminary indication of a release, for a given compliance well and monitoring parameter (well/MPar) pair, whereby the discharger applies an approved data analysis method to two new samples for that well/MPar pair. The retest validates the preliminary indication if either or both of the retest samples triggers a measurably significant increase indication. The scope of the retest, at any given

compliance well, is limited to only those MPar that gave a preliminary indication at that monitoring point.

**“Detection mode”** for a given compliance well and monitoring parameter (MPar) pair, means a state in which one tests for a measurably significant increase, for that monitoring parameter at that well, using an appropriate statistical or nonstatistical data analysis method. Once that well/MPar pair exhibits a measurably significant increase (including an initial indication verified by a discrete retest), it is monitored, thereafter, in “tracking mode” until the inception of the proof period, following successful completion of corrective action.

**“DMP”** means a Detection Monitoring Program that implements the SWRCB’s requirements, under CCR Title 27 §20420 and under SWRCB Policy No. 93-62, which requires the RWQCB to apply any federal MSW landfill requirements, under 40 CFR §258.54, that are additional to, or are broader in the scope than, the CCR Title 27 requirements.

**“EMP”** means an Evaluation Monitoring Program that implements the requirements under CCR Title 27 §20425, and under SWRCB Policy No. 93-62, which requires the RWQCB to apply any applicable federal MSW landfill requirements under 40 CFR §258.55 through 258.57, that are additional to, or are broader in scope than, the CCR Title 27 requirements. This state program constitutes a stepping stone to a Corrective Action Program, in response to the landfill’s having exhibited a measurably significant increase of a release or to its having exhibited physical evidence of a release [see CCR Title 27 §20385(a)(2 and 3)].

**“Existing Footprint”** (as capitalized) means the area of land, at an MSW landfill, that is covered by waste as of the date that landfill became subject to the federal regulations of 40 CFR Part 258, pursuant to §258.1 of that part.

**“Geographic variation”** means the random change in the mean, or median concentration of a given MPar between different locations in a given ground water body, in the absence of a release.

**“Inter-well comparison”** means a type of statistical or nonstatistical data analysis, applied to a given detection mode compliance well and monitoring parameter (well/MPar) pair, in which one compares current concentration data, for that MPar and well, with a suite of background data from the appropriate well(s) to determine if that MPar has produced a measurably significant increase at that well. Generally speaking, the use of upgradient background data tends to produce higher false-positive and false-negative rates than the intra-well comparison approach, but is appropriate in those cases where it is not feasible to validate that a compliance well’s own historical data reflects water quality in the absence of a release.

**“Intra-well comparison”** means a type of statistical or nonstatistical data analysis, applied to a given detection mode compliance well and monitoring parameter (well/MPar) pair, in which one compares current concentration data for that MPar, with a suite of background data consisting of selected historical data from that same well, to determine if that MPar has produced a measurably significant increase at that well. Typically, the use a compliance well’s own historical data for an MPar, provides better statistical power (to identify a real release and

to avoid producing false-positive indications) than does the inter-well comparison approach, but only in a case where it is reasonable to assume that the compliance well's own historical data does not reflect the presence of a release for that MPar.

**“LCRS”** means a functioning leachate collection and removal system (i.e., one that produces leachate).

**“LFG”** means landfill gas, including any volatile organic constituents.

**“M&RP”** means the Monitoring and Reporting Program that is an attachment to the WDRs (or other order) and that is incorporated by reference by the WDRs.

**“Method Detection Limit (MDL)”** means the minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte's concentration is greater than zero, as defined in 40 CFR §136, Appendix B.

**“Measurably significant increase”** means a condition in which an appropriate data analysis method shows an initial indication of a release, for a given detection mode compliance well and monitoring parameter (well/MPar) pair, that is verified by a discrete retest (for that well and MPar).

**“Monitoring parameter (MPar)”** is a part of the landfill's Water Standard and means a list consisting of those constituents of concern (COCs) that are present at a detectable level (trace level or above) in ground or surface water affected by the release. This is the subset of all COCs that is subject to testing for a measurably significant increase, in detection mode, at all compliance wells. For ground water, at a landfill with a functioning leachate collection and removal system (LCRS), this suite includes all Appendix II constituents that have been detected (at trace level or above) and verified in leachate and, subsequently, have been detected (at trace level or above) and verified in a COC-scan of ground water at compliance wells affected by the release. For ground water, at a landfill without a functioning LCRS, this suite includes all Appendix II constituents that have been detected (at trace level or above) and verified in a COC-scan of ground water at any compliance well affected by the release.

**“Monitoring Point”** for any given monitored medium (surface water, ground water, or the unsaturated zone), means a location, including any installed access device (e.g., well or lysimeter), that is named in the M&RP as a place where the discharger monitors that medium: (1) to detect the arrival of the release front for each monitoring parameter (MPar) that is in detection mode at that location; (2) to detect changes in the concentration of each MPar that is in tracking mode at that location; and (3) in a case where the location that is in tracking mode for most MPars that are involved in the release, to detect the presence at trace level or above, of any constituents of concern (COCs) that have not previously been detected in that medium (COCs newly detected and verified in that medium become MPars for that medium).

**“MSW landfill”** means any landfill that is subject to any portion of the federal regulations under 40 CFR §258 by virtue of having received municipal solid waste (household waste) at any time and having received any waste after October 9, 1991.

**“Operating record”** means the organized compendium of information about the landfill and facility that the discharger maintains and makes available to the public at a site approved by the RWQCB and/or Enforcement Agency and that contains a copy of each document submitted to, or received from, any State or local regulatory agency for purposes of obtaining or updating either the Facility Permit or the WDRs, demonstrating compliance with the California Environmental Quality Act, or complying (or demonstrating compliance) with any applicable requirements under 40 CFR §258.

**“Point of compliance (POC)”** is, for the ground water medium, a part of the landfill’s Water Standard and means a conceptual vertical surface that is located, in map view, along the hydraulically downgradient limit of waste placement at the landfill and that extends downward through the uppermost aquifer underlying the Unit. The federal MSW regulations require one of more ground water monitoring points along this vertical surface to monitor the quality of ground water passing it (see 40 CFR §258.51), whereas the RWQCB will name other ground water monitoring points (not along this vertical surface) as needed to provide the earliest possible detection and measurement of a release [see CCR Title 27 §20415(b)(1)].

**“Practical quantitation limit (PQL)”** means the value established as a target value by USEPA that is the lowest concentration of a substance that can be consistently determined within +/- 20% of the true concentration by 75% of the laboratories tested in a performance evaluation study. Alternatively, if performance data are not available, the PQL for carcinogens is the method detection limit (MDL) multiplied by 5, and for noncarcinogens is the MDL multiplied by 10. These estimated PQLs are listed in Appendix II to 40 CFR §258. Generally, these are target values that may not reflect the constraints of matrix effects; therefore, the RWQCB requires the discharger to keep an up-to-date listing of the applicable laboratory-specific PQL and MDL estimates for each analyte on the constituent of concern list.

**“Release”** means the three-dimensional portion of the monitored medium (ground water, surface water, or the unsaturated zone) comprised of all locations therein that are affected by one or more monitoring parameters that have migrated from the landfill to such an extent that a properly constructed monitoring point, at that location, would trigger a measurably significant increase over the applicable concentration limit, using an appropriate data analysis method meeting the requirements of CCR title 27 §20415(e)(9) and a background data set sample size of 16 or more data points.

**“Retest”** when applied to a scan to detect the presence of an appropriate list of analytes in leachate, landfill gas, or ground water (at an affected monitoring point), means taking a single additional sample from the indicating medium (or, for ground water, the indicating monitoring point) to determine whether the initial detection for that analyte, is valid. When applied to the six-monthly monitoring effort for a given compliance well and monitoring parameter pair in detection mode, see “discrete retest.”

**“RWQCB” or “Regional Board”** means the appropriate California Regional Water Quality Control Board.

**“Sample size”** for a given compliance well and monitoring parameter (well/MPar) pair in detection mode, means the number of data points used to represent the variability of the background population or to represent the present compliance status of the MPar at that well, when applying an appropriate data analysis method.

**“Scan,”** means a determination as to whether any of a given list of constituents are detectable (at the trace level or above) in the monitored medium (typically leachate, ground water, or landfill gas). The term includes both the initial measurement and, for a newly detected constituent, the results of the single retest sample. To identify a newly detected constituent, the constituent must be detected (at trace level or above) and then verified by being detected in the single sample retest. When applied to leachate or landfill gas, the term indicates a way of determining which Appendix II constituents should be included in the landfill’s the COC list (once detected and verified, a constituent is added permanently to the COC list). When applied to ground water, the term indicates a way of determining which Appendix II constituents should be included in the landfill’s MPar list (once detected and verified at any given compliance well or background well, a constituent is added permanently to the MPar list). *{Note: for a landfill without an LCRS, delete the underlined words}*

**“SOR”** means a federal Selection Of Remedy study, under 40 CFR §258.57, which applies to any MSW landfill that has exhibited a measurably significant release over the applicable Water Standard at any well along the Point of Compliance for any Appendix II constituent. In California, this process is one in which the RWQCB, in the presence of any affected persons and other interested parties, considers all relevant factors and adopts a suite of corrective action measures – developed during the Assessment of Corrective Measures (ACM) study – which the discharger will apply during the CAP to remediate the effects of the release. Generally speaking, the studies serve the same function, under the federal approach, as the Evaluation Monitoring Program does under the State approach.

**“SW-846”** means the laboratory analytical guidance document published by the USEPA.

**“SWRCB”** means the California State Water Resources Control Board.

**“SWRCB Resolution No. 93-62”** means the order the SWRCB adopted in 1993 as State Policy for Water Quality Control (has the force of regulation) that applies to all MSW landfills and requires a composite liner for all portions of the landfill outside of its Existing Footprint, with rare exceptions, and requires the RWQCB to apply any requirement of 40 CFR §258 that is missing from, or broader in scope than, the SWRCB’s landfill requirements under CCR Title 27. This order is available for viewing or downloading at <http://www.swrcb.ca.gov/cwphome/chap15/93-62.htm>.

**“Tracking mode”** for a given compliance well and monitoring parameter (well/MPar) pair, means a state in which there has already been a measurably significant increase (for that MPar at that well) such that the focus has changed from detecting the release to tracking it. In this mode, one keeps an up-to-date concentration versus time plot used in the six-monthly report validating the effectiveness of the corrective action measures (CAMs) – required under CCR Title 27 §20430(h) – to demonstrate either that current CAMs are effectively remediating the

release or to identify the need for proposing additional/changed CAMs under CCR Title 27 §20430(i or j) and 40 CFR §258.58(b). A well/MPar pair in this mode remains in this mode until the inception of the proof period following successful completion of corrective action.

**“Time Schedule Order (TSO)”** means a Cleanup and Abatement Order that includes an enforceable schedule of compliance for achieving listed milestones in the cleanup.

**“VOC”** means any of the volatile organic constituents that can be identified in a water or leachate sample under USEPA Method 8260 (see SW-846). The USEPA lists a subset of 47 such constituents in its Appendix I default monitoring parameter list (see Appendix I to 40 CFR §258).

**“VSRLF”** means a very small rural landfill that has demonstrated to the satisfaction of the RWQCB that it meets, and continues to meet, the qualifying preconditions, under 40 CFR §258.1(f), for being exempt from the federal design criteria (see 40 CFR §258, Subpart D) and the federal monitoring requirements (see 40 CFR §258, Subpart E). In California, to qualify as being such a landfill, the Operating Record must include the RWQCB’s concurrence with the discharger’s demonstration under 40 CFR §258.1(f). Such a landfill is still required to monitor pursuant to the CCR Title 27 regulations and the federal exemptions cease to apply as soon as the landfill exhibits evidence of a release.

**“Water quality protection standard (Water Standard)”** means the multi-part system by which the discharger determines the compliance status of the landfill, with respect to the release of waste constituents. For each monitored medium, the term includes: the constituent of concern (COC) list and the monitoring parameter (MPar) list (i.e., the subset of COCs that are detectable in that medium); the concentration limit for each MPar at each monitoring point; the monitoring point (for the ground water medium, these are the compliance wells); and, for the ground water medium, the point of compliance. A violation of this standard occurs whenever a COC that is detectable in that medium (i.e., an MPar) produces a measurable significant increase over its applicable concentration limit at any monitoring point, as indicated by an appropriate statistical or nonstatistical data analysis method meeting the requirements of CCR Title 27 §20415(e)(9). Such a violation triggers a change from detection mode to tracking mode for that well/MPar pair.

**“Well and monitoring parameter (Well/MPar) pair”** means a given monitoring parameter at a given well (typically a compliance well, unless a release is detected at a background well). The discharger tracks compliance with the Water Standard for each such pair; therefore, the minimum number of such pairs for ground water medium is equal to the number of compliance wells times the number of MPars. At any given time, such a well and constituent combination will be either in detection mode or in tracking mode.

**“WC”** means the statutes in the California Water Code.

**“WDRs”** means Waste Discharge Requirements.